

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An oral phototherapy apparatus comprising:
a body sized and shaped so as to fit at least partially in a user's mouth and adapted to conform to the shape of at least a portion of the oral cavity; and
at least one radiation emitter coupled to the body to irradiate a portion of the oral cavity with phototherapeutic radiation; and
at least one thermally conductive element configured to extract heat from the emitter[,];
~~wherein the thermally conductive element comprises a fluid heat transfer medium.~~
a diagnostic sensor coupled to the body; and
a controller which controls the radiation emitter based on signals from the diagnostic sensor.
2. (Original) The apparatus of claim 1 wherein the emitter further comprises at least one source of radiation having wavelength components in at least two separate spectral bands.
3. (Original) The apparatus of claim 1 wherein the emitter further comprises at least two sources of radiation emitting different spectral bands of radiation.
4. (Original) The apparatus of claim 1 wherein the emitter further comprises at least one radiation source selected from the group of light-emitting diodes, superluminescent diodes, laser diodes, vertical cavity surface emitting lasers, fiber lasers, fluorescent solid-state sources, and lamps.
5. (Currently Amended) The apparatus of claim 1 wherein the ~~apparatus further comprises a~~ controller ~~for controlling~~ controls at least one parameter for irradiation of the oral cavity selected from the group of wavelength, power, pulsewidth and treatment time.
6. (Original) The apparatus of claim 1 wherein the apparatus further comprises an optical element for directing radiation in different directions.

7. (Original) The apparatus of claim 6 wherein the apparatus is configured to direct radiation to at least one portion of the oral cavity selected from the group of a tooth, cheek, tongue, palate, throat and facial tissue, lymphatic tissue, blood, gland, follicle, collagen and pigmentation.

8. (Original) The apparatus of claim 1 wherein the apparatus further comprises an optical filter for selecting a spectral band of radiation for use in phototherapy.

9. (Original) The apparatus of claim 1 wherein the apparatus further comprises a contact sensor and controller which controls the radiation emitter based on signals from the contact sensor.

10. (Currently Amended) The apparatus of claim 1 wherein the ~~apparatus further comprises~~ diagnostic sensor is capable of sensing at least one of caries, whitening, brightening of hard tissue, mucosal diseases, concentration of bacteria, and completion of treatment ~~an diagnostic sensor and controller which controls the radiation emitter based on signals from the diagnostic sensor.~~

11. (Cancelled)

12. (Cancelled)

13. (Previously Presented) The apparatus of claim 1 wherein the apparatus further comprises a handle that serves as a heat sink.

14. (Currently Amended) An oral phototherapy apparatus comprising:
a body sized and shaped so as to fit at least partially in a user's mouth and adapted to conform to the shape of at least a portion of the oral cavity; and
at least one radiation emitter optically coupled to the body to irradiate a portion of the oral cavity with phototherapeutic radiation; ~~and~~
a handle coupled to the body; and

at least one thermally conductive element configured to extract heat from the emitter, wherein the thermally conductive element is thermally coupled at one location to the radiation emitter and at another location to a portion of the handle so as to transfer heat generated by the emitter to the handle, comprise a phase change material.

15. (Previously Presented) The apparatus of claim 1 wherein the apparatus further comprises a heat transfer element for heating a portion of the oral cavity with waste heat from the apparatus.

16. (Previously Presented) The apparatus of claim 1 wherein the apparatus further comprises a light diffuser optically coupled to the at least one radiation emitter to deliver diffuse radiation to the oral cavity.

17. (Previously Presented) An oral phototherapy apparatus comprising:

a body sized and shaped so as to fit at least partially in a user's mouth and adapted to conform to the shape of at least a portion of the oral cavity; and

at least one radiation emitter coupled to the body to irradiate a portion of the oral cavity with phototherapeutic radiation;

at least one thermally conductive element configured to extract heat from the emitter; and
an airway lumen passing through the body to facilitate breathing by the user during a procedure.

18. (Original) The apparatus of claim 1 wherein the body is compliant to facilitate conformation to a portion of the oral cavity.

19. (Original) The apparatus of claim 1 wherein apparatus further comprises a body in the form of a mouthpiece adapted for positioning between at least a user's teeth and gums during phototherapy.

20. (Original) The apparatus of claim 1 wherein the apparatus further comprises a body adapted for placement in a position covering at least a portion of a user's tongue during phototherapy.

21. (Original) The apparatus of claim 1 wherein the apparatus further comprises a body adapted for placement in a fixed position relative to the oral cavity during phototherapy.

22. (Previously Presented) The apparatus of claim 1 wherein the apparatus is configured such that, upon disposition of the applicator within the mouth, radiation from the emitter can penetrate the mucosal lining of the oral cavity and deliver phototherapeutic energy to a region of facial tissue.

23. (Original) The apparatus of claim 1 wherein the apparatus further comprises an ultrasound generator for delivering acoustic energy to a target tissue site.

24. (Original) The apparatus of claim 1 wherein the apparatus further comprises a vibrating element for applying intermittent pressure to a target tissue site.

25. (Original) The apparatus of claim 1 wherein the apparatus further comprises a drug delivery port.

26. (Original) The apparatus of claim 1 wherein the apparatus further comprises an energy reflector for redirecting phototherapeutic radiation towards a target tissue site.

27. (Previously Presented) The apparatus of claim 14 wherein the emitter further comprises at least one source of radiation having wavelength components in at least two separate spectral bands.

28. (Previously Presented) The apparatus of claim 14 wherein the emitter further comprises at least two sources of radiation emitting different spectral bands of radiation.

29. (Previously Presented) The apparatus of claim 14 wherein the apparatus further comprises an optical element for directing radiation in different directions.
30. (Previously Presented) The apparatus of claim 14 wherein the apparatus further comprises a sensor and controller which controls the radiation emitter based on signals from the sensor.
31. (Previously Presented) The apparatus of claim 14 wherein the apparatus further comprises a heat transfer element for heating a portion of the oral cavity with waste heat from the apparatus.
32. (Previously Presented) The apparatus of claim 14 wherein the apparatus further comprises a light diffuser optically coupled to the at least one radiation emitter to deliver diffuse radiation to the oral cavity.
33. (Previously Presented) The apparatus of claim 14 wherein the apparatus further comprises an ultrasound generator for delivering acoustic energy to a target tissue site.
34. (Previously Presented) The apparatus of claim 14 wherein the apparatus further comprises an energy reflector for redirecting phototherapeutic radiation towards a target tissue site.
35. (Previously Presented) The apparatus of claim 17 wherein the emitter further comprises at least one source of radiation having wavelength components in at least two separate spectral bands.
36. (Previously Presented) The apparatus of claim 17 wherein the emitter further comprises at least two sources of radiation emitting different spectral bands of radiation.
37. (Previously Presented) The apparatus of claim 17 wherein the apparatus further comprises an optical element for directing radiation in different directions.

38. (Previously Presented) The apparatus of claim 17 wherein the apparatus further comprises a sensor and controller which controls the radiation emitter based on signals from the sensor.

39. (Previously Presented) The apparatus of claim 17 wherein the apparatus further comprises a heat transfer element for heating a portion of the oral cavity with waste heat from the apparatus.

40. (Previously Presented) The apparatus of claim 17 wherein the apparatus further comprises a light diffuser optically coupled to the at least one radiation emitter to deliver diffuse radiation to the oral cavity.

41. (Previously Presented) The apparatus of claim 17 wherein the apparatus further comprises an ultrasound generator for delivering acoustic energy to a target tissue site.

42. (Previously Presented) The apparatus of claim 17 wherein the apparatus further comprises an energy reflector for redirecting phototherapeutic radiation towards a target tissue site.

43. (New) The apparatus of claim 1, wherein the diagnostic sensor comprises a fluorescence detection module.

44. (New) The apparatus of claim 14, wherein the handle includes a pathway for delivering to or removing substances from the oral cavity.